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to bring them together considerable modification of the characters of the genus *Sclerochloa* of Beauv. and of *Atropis* as defined by Trinius must be effected. Inded I do not think this can be accomplished with reference to Nuttall's *Poa Andina* without separating from *Poa* a species which as naturally belongs there as does *P. alpina.* With respect to the plant generally known as *Poa tenuifolia,* Nutt., especially if we include the larger California forms there is a wonderful variation in nearly all the characters usually defined in the limitation of a species, namely, in the height of culms, the length and rigidity of leaves, both radical and cauline, the size of ligule, the size and form of panicle. the length and spread of the rays, and to some extent in the size and form of the flowering parts. From a very careful study of hundreds of specimens I conclude that this species or group of species is essentially characterized by linear, linear-oblong or linear-lanceolate flowering glumes, of a hard or firm texture, minutely scabrous, convex or rounded on the back, and with the apex and more or less of the margins scarious and peculiarly tinged with a yellowish bronze color. The apex of the flowering glume may be acute or obtuse, entire or erose. In *Poa Andina,* Nutt., as I understand that species, the flowering glumes are broader, generally thinner in texture, less scabrous, smooth or softly and sparsely pubescent, keeled and generally much compressed, in some forms quite as much compressed as in *Poa alpina.*

Usually *Poa tenuifolia,* has *long, narrow* outer glumes, sometimes quite equalling the flowering ones in length; usually *Poa Andina* has shorter and broader outer glumes. In my consideration of *tenuifolia* I have included the large California forms, one of which I some years ago described as *Festuca Oregona,* (see BOT. GAZETTE for August 1877) and which I now return to *Atropis Californica* on the authority of Gen'l Munro, to whom I sent specimens which were returned to me with his name as above and with synonym *Sclerochloa Californica,* Munro in Pl. Hartw. I particularly state this because in the Botany of California, Gen'l Munro's name is applied to the *Poa Andina,* Nutt. It is not probable that Gen'l Munro has seen all the forms of the two plants, but in view of their variability he may have even confounded the two. In the species, or group of species, which I have taken for *Poa tenuifolia,* Nutt., or *Atropis Californica,* Munro, there is such a perplexing variety of forms that it may well be conjectured that Nature is now engaged in the work of differentiation, and that in process of time the lines will become more sharply defined and several new species established.

GEO. VASEY.

Systematic Botany Nevertheless.—

"The reason why I can not tell,
But this alone I know full well,
I do not like you, Dr. Fell."

And here the average amateur, interested in his local flora, and fond of dabbling a little in systematic botany, had better, perhaps, take his stand, when urged to study vegetable histology and physiology instead. And yet, when you find that a very large proportion of those who constitute the purchasers of botanical books (a very useful class to the Big-wigs) and the subscribers to botanical periodicals (use understood) are interested in plants themselves,and not in their "Latin parts"—parenchyma, collenchyma, sclerenchyma and all the rest—interested in their structural affinities as expressed in a methodical arrangement, in their geographical distribution and antecedents, there must be some reason for it. For ever since the day when some of us pulled through the first two hundred pages of the earlier edition of Gray's Text book (if the "term" had been longer we might have gone further with our memorized recitations) down to the present era of Summer Schools all given over to the study of protoplasm, we have had class after class ground through this course of Histology, rarely under the most efficient guidance, and oh! how abundantly under the perfunctory charge of the average High School teacher, and as a patent commentary on the outcome of it all the editor of this delightful GAZETTE of ours asking the "physiological botanists of this country" to take in a "hearty way" "half of its space," but they "are either few in number" or else "do not record their investigations." Meanwhile systematic botany, *practically* ignored in our schools,(I measure my words and speak from a tolerably extended observation) needs no noise of the "recruiting sergeant" to keep its ranks full! Prof. Morse in his charming preface to the "First Book of Zoology" says,—"to collect in the field, to make a cabinet, and then to examine and study the specimens collected are the three stages that naturalists, with few exceptions, have passed through in their boyhood." "The way to commence the study of Zoology (and Botany as well) is to follow the course one naturally pursues when he is led to the study by predisposition." I have not a word in disparagement of the importance of histological studies, nor of the interest that may be found therein by persons who have an aptitude for such investigations. What I do protest against is the way in which Histology is thrust upon students as *the only* foundation for a fair knowledge of systematic botany. It is assumed that a course of nice, microscopical work in cell structure is a capital preparation for the enjoyment which the average amateur seeks to find in the study of plants. This I am willing to half admit but, oh! the unutterable stupidity of simply memorizing the account of it all which is the fate of ninety-nine out of one hundred of the students who will "take botany" in their course "next term."*

After all, the choice is a matter of predilection. From the amateurs like John Stuart Mill and Charles Kingsley—men of transcendent ability, who seek in the amiable science recreation for a summer's vacation, or an occasional holiday, down to the young man or young woman of the obscure village, who is striving to keep mind and heart sweet and pure by "considering the lilies of the field" (I concede my physiological friend that the rest of the quotation is against me) it is a noticeable fact that systematic botany has the preference. There is a hearty enthusiasm among field workers which is infectious; a generosity in sharing spoils which makes "a good find" half a disappointment withal if there are not specimens enough to go 'round; and all this leads to correspendence, and thus furnishes the "key to the intercourse of most amiable minds." 'To botany," says Sir James E. Smith in a letter to the Rev. Dr. Muhlenberg, "I owe friendships and connexions I else could have had no chance of forming."

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* "The system I repudiate is that which allows teachers who have not come into direct contact with the leading facts of a science to pass their second-hand information on."—*Huxley*.

An argument brought forward by your excellent contributor, Prof. Rothrock, is in effect (I quote from memory) that Torrey and Gray, Engelmann and Watson have so worked up *for good* our North American Flora that there is nothing worth considering left to be done in that direction by their successors. The introduction of Mr. Sereno Watson's name, most appropriate as a matter of fact, is unfortunate for the argument. How many of us knew of Mr. Watson even by name before the publication of the "Botany of the 40th parallel" and since that time how he has been straightening out *Lupinus*, *Œnothera* and *Potentilla* and our Chenopods, &c., eliminating right under our very noses such species as *Ranunculus ambigens* and *Polygonum Muhlenbergii*, while the rest of us might have drifted along under a hazy impression that Torrey and Gray and Engelmann had worked that ground all over and there was nothing left worth gleaning. Just think how the Flora of the British Islands has been elaborated, and with what sustained enthusiasm it is still studied! What works of supererogation, pure and simple, are Bentham's "Hand Book" and Hooker's "Student's Flora" if we are to accept the view that the dictum of any systematist, no matter what his rank, is final. Again who is to be the botanical geographer of the American Flora as the recently deceased Hewit C. Watson was of the British, above all who is to collect the data upon which his generalizations are to rest!

I fear our friend Dr. Rothrock is indulging in a bit of covert flattery when he tells us to find encouragement in what Darwin got out of the study *Drosera*. Do we not all know too well that back of Darwin's brilliant success lies a sagacity in questioning nature and in appreciating the full significance of the response wholly phenomenal, and that one of us might make and write down observations for a lifetime, as utterly barren of important result as an undigested weather record.

But there is room for all. We need not crowd or jostle each other. Only let us hope that when Prof. Rothrock comes to establish that School of Botany for which he is so well equipped, not only by training at home and abroad, but that rarer qualification, personal magnetism, that he will make the critical study of a few forms but the first step toward the comparative study of many forms. The description of *a plant* with some such facile help as a printed schedule affords is one thing, the description of *a species* flexible enough to include varying forms is, so far as the exercise of one's wits is concerned, quite another thing, and the study of species in groups, discriminating for one's self without hint or help from those who have gone over the ground before, *this* has in it an educational value of the highest import, and prepares the student for much critical and independent work a field which yet remains to be done in our home flora.

—EMESBY.